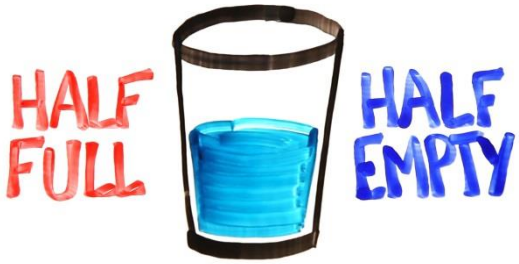
Funky Fractions!

What does a half mean to you?
Draw a picture to represent ½

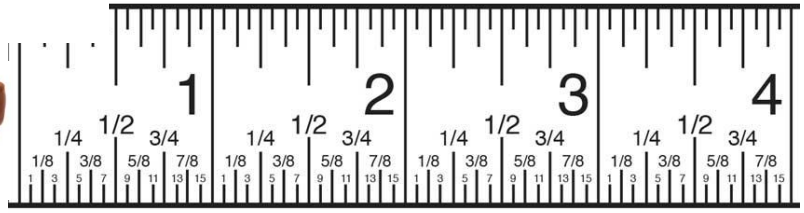
This evening we will be sharing…

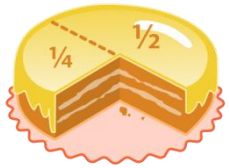
- Some activities that we do in school
- Ideas to support your child's developing understanding of fractions.
- An outline of the progression from KS1 to lower KS2 and on to upper KS2.

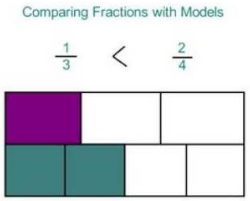
Where might we find fractions?

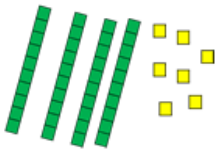


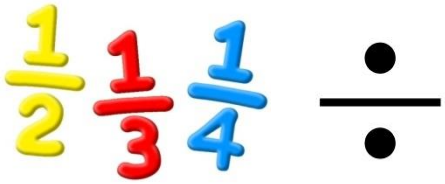
$\frac{3}{5}$ ← numerator ← denominator











Pictures

Manipulatives and models

Written symbols

Real world situations

Oral Language

- half
- quarter
- whole
- two thirds
- parts
- numerator/denominator

What do fractions look like at GBPS?

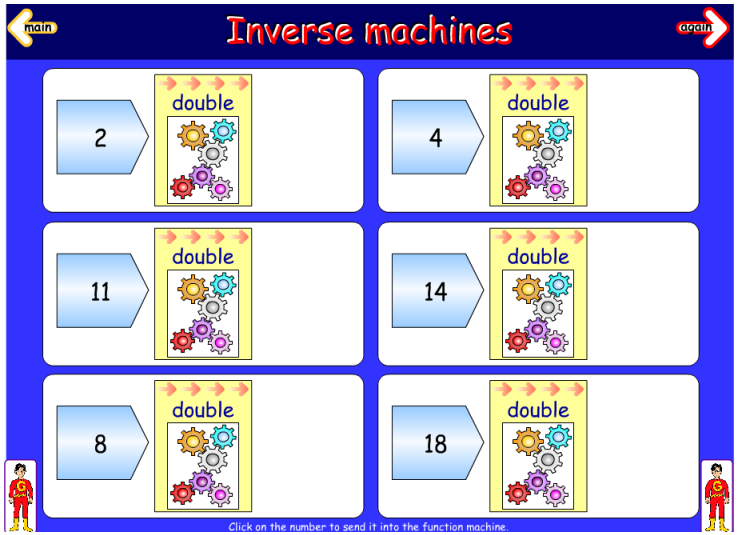
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Pupils should be taught to: □ recognise, find and name a half as one of two equal parts of an object, shape or quantity □ recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	Pupils should be taught to: □ recognise, find, name and write fractions 1/3, 1/4, 2/4, 3/4 of a length, shape, set of objects or quantity □ write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.	Pupils should be taught to: □ count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 □ recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators □ recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators □ recognise and show, using diagrams, equivalent fractions with small denominators □ add and subtract fractions with the same denominator within one whole [for example, 7/7 +1/7 = 6/7] □ compare and order unit fractions, and fractions with the same denominators □ solve problems that involve all of the above.	Pupils should be taught to: □ recognise and show, using diagrams, families of common equivalent fractions □ count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. □ solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number □ add and subtract fractions with the same denominator □ recognise and write decimal equivalents of any number of tenths or hundredths □ recognise and write decimal equivalents to ¼, ½, ¾ □ find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths □ round decimals with one decimal place to the nearest whole number □ compare numbers with the same number of decimal places up to two decimal places □ solve simple measure and money problems involving fractions and decimals to two decimal places.	Pupils should be taught to: □ compare and order fractions whose denominators are all multiples of the same number □ identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths □ recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5] □ add and subtract fractions with the same denominator and denominators that are multiples of the same number □ multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams □ read and write decimal numbers as fractions [for example, 0.71 = 71/100] □ recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents □ round decimals with two decimal places to the nearest whole number and to one decimal place □ read, write, order and compare numbers with up to three decimal places □ solve problems involving number up to three decimal places □ recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal	Pupils should be taught to: □ use common factors to simplify fractions; use common multiples to express fractions in the same denomination □ compare and order fractions, including fractions > 1 □ add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions □ multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, ¼ x ½ = 1/8 □ divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6] □ associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] □ identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places □ multiply one-digit numbers with up to two decimal places by whole numbers □ use written division methods in cases where the answer has up to two decimal places □ solve problems which require answers to be rounded to specified degrees of accuracy □ recall and use equivalences

By the end of Key Stage 1…

Year 1	Year 2
Pupils should be taught to: □ recognise, find and name a half as one of two equal parts of an object, shape or quantity □ recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	Pupils should be taught to: □ recognise, find, name and write fractions 1/3, 1/4, 2/4, 3/4 of a length, shape, set of objects or quantity □ write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.

KS1

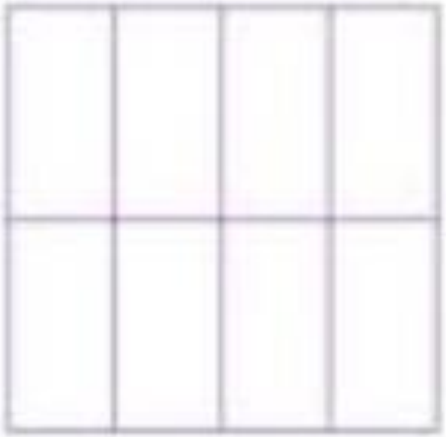
- Activities include:
  - Mega Maths
  - Cutting Activities
  - Food
  - Resources including teddies, ladybirds, counters
  - Outdoor learning – collecting materials, sharing them, positional language (rotate ½ turn)



Year 2 examples

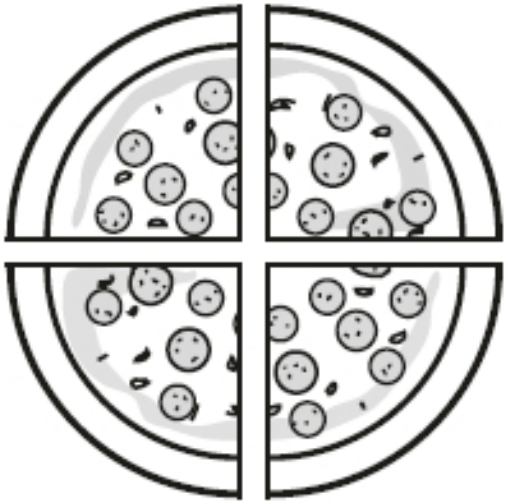
8

Shade $\frac{1}{4}$ of the shape below



1 mark

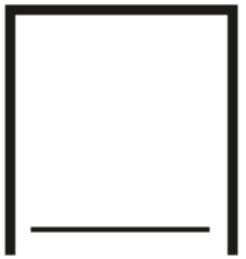
2F1a - Recognise, find, name and write fractions ½, ⅓, ¼, ¾ of a length, shape, set of objects or quantity



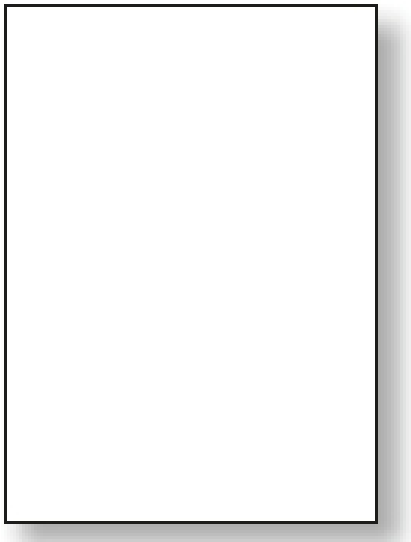
Sita cuts a pizza into four equal slices.

She eats one slice.

What fraction of the pizza does she eat?



How many pieces of paper will you have when cut in half?



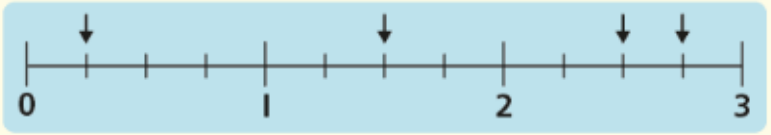
pieces of paper

abacus Mastery Checkpoint

Have you mastered fractions?

a) Look at each shape. Write the fraction of the shaded part.

b) What numbers are the arrows pointing to on the number line?



Champions' Challenge

1. Draw a rectangle and colour exactly $\frac{2}{3}$ of it.
2. Draw a triangle and colour exactly $\frac{1}{2}$ of it.
3. Sam is counting in quarters. He starts by saying one quarter ($\frac{1}{4}$).
   Then he says five more numbers aloud.
   What is the fifth number he says?
   What is the sixth number?

Year 3/4

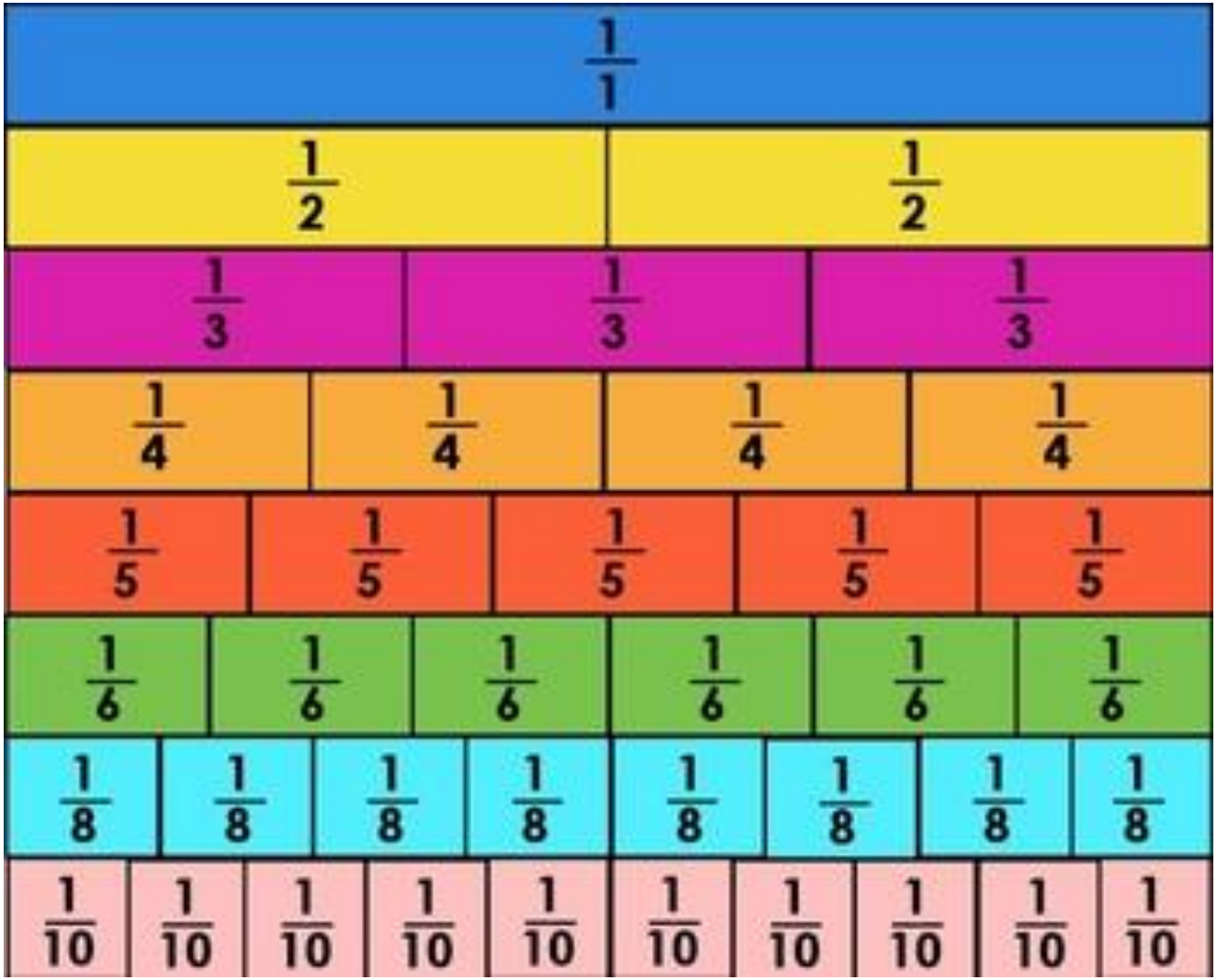
Year 3	Year 4
Pupils should be taught to: □ count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 □ recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators □ recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators □ recognise and show, using diagrams, equivalent fractions with small denominators □ add and subtract fractions with the same denominator within one whole □ compare and order unit fractions, and fractions with the same denominators □ solve problems that involve all of the above.	Pupils should be taught to: □ recognise and show, using diagrams, families of common equivalent fractions □ count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. □ solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number □ add and subtract fractions with the same denominator □ recognise and write decimal equivalents of any number of tenths or hundredths □ recognise and write decimal equivalents to ¼, ½, ¾ □ find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths □ round decimals with one decimal place to the nearest whole number □ compare numbers with the same number of decimal places up to two decimal places □ solve simple measure and money problems involving fractions and decimals to two decimal places.

Skittle investigation

- Sort the skittles by colour
- What fraction of the packet is each colour?
- Can you put them in order?
- Can any of the fractions be simplified?

- Ordering fractions with the same denominator

Fraction Wall



Reminder: There is one of these on the school wall near the small playground.

Year 5/6

Pupils should be taught to:	Pupils should be taught to:
compare and order fractions whose denominators are all multiples of the same number	use common factors to simplify fractions; use common multiples to express fractions in the same denomination
identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	compare and order fractions, including fractions > 1
recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
add and subtract fractions with the same denominator and denominators that are multiples of the same number	multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, ¼ x ½ = 1/8
multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]
read and write decimal numbers as fractions [for example, 0.71 = 71/100]	associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8]
recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
round decimals with two decimal places to the nearest whole number and to one decimal place	multiply one-digit numbers with up to two decimal places by whole numbers
read, write, order and compare numbers with up to three decimal places	use written division methods in cases where the answer has up to two decimal places
solve problems involving number up to three decimal places	solve problems which require answers to be rounded to specified degrees of accuracy
recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal	recall and use equivalences

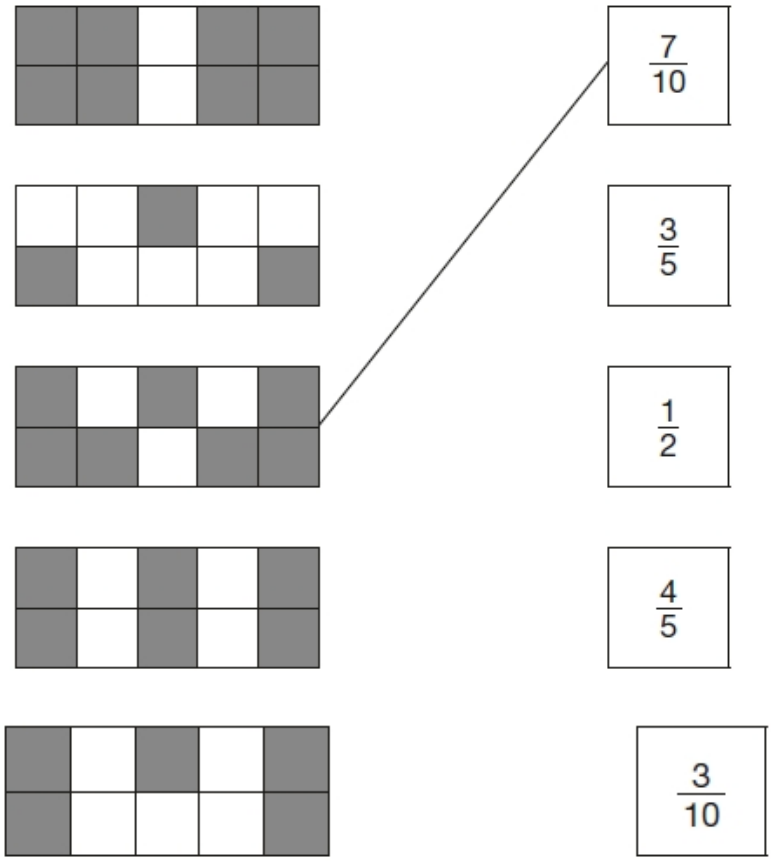
Year 5/6 examples

Here are some shapes made of squares.

A fraction of each shape is shaded.

Match each shape to its equivalent fraction.

One has been done for you.



On Saturday Lara read $\frac{2}{5}$ of her book.

On Sunday she read the **other** 90 pages to finish the book.

How many pages are there in Lara's book?

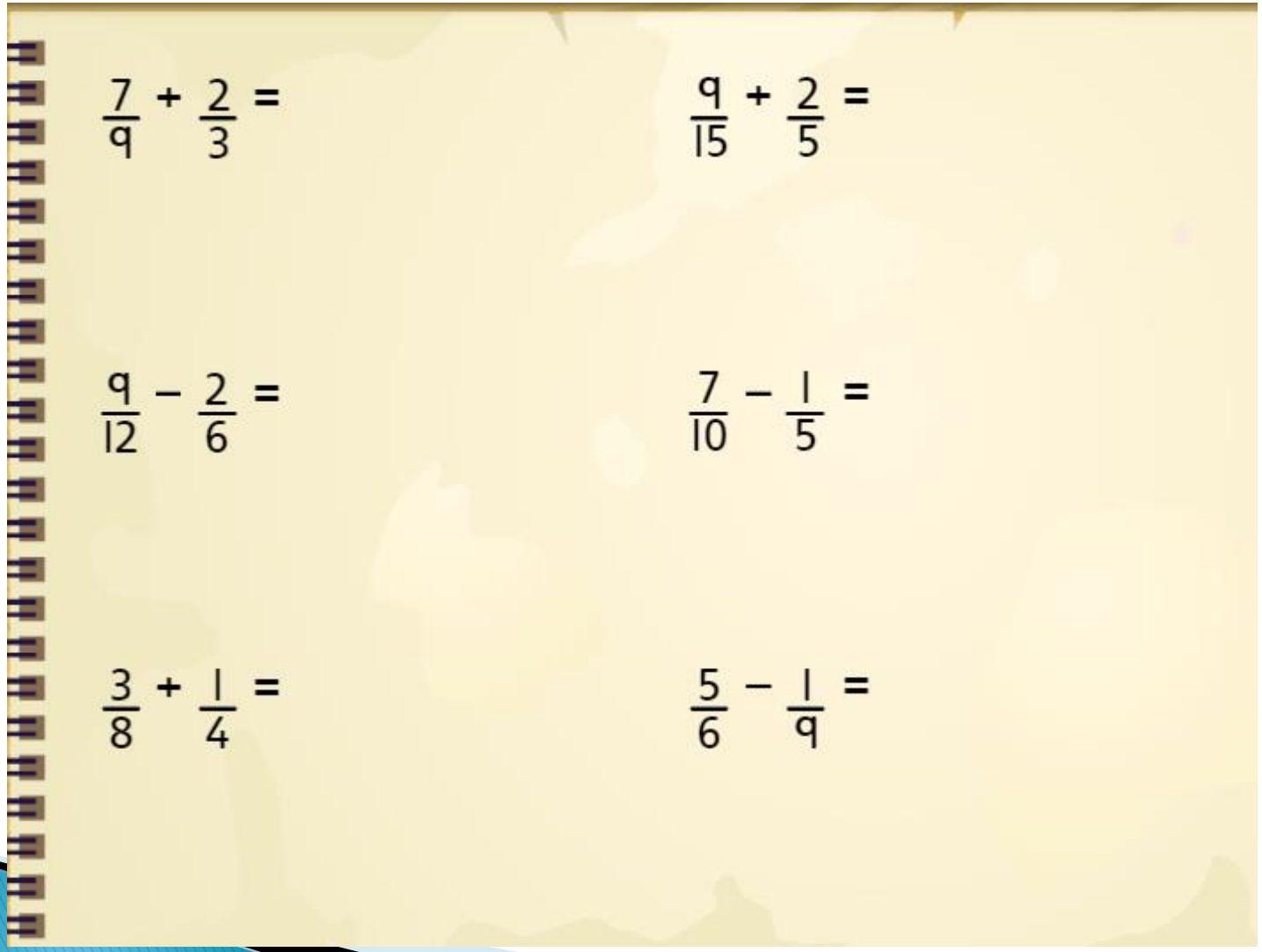
Show your method

pages

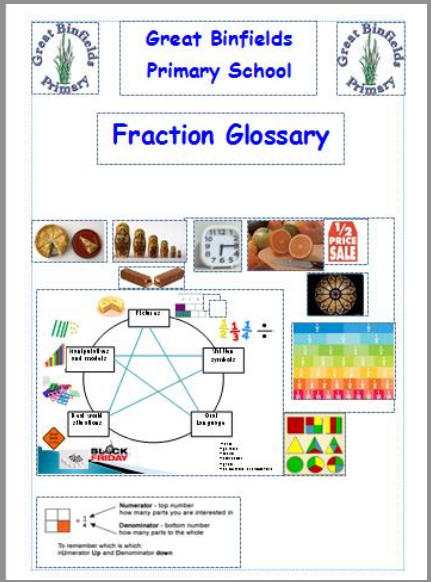
2 marks

Adding and subtracting fractions

Lumberjack Fractions – Education City



Fractions glossary



Decimal - A decimal is a number based on the number 10. It can be thought of as a special type of fraction where the denominator is a power of 10.

Decimal point - A period or dot that is part of a decimal number. It indicates where the whole number stops and the fraction portion begins.

Denominator - The bottom part of a fraction. It shows how many equal parts that the item has been divided into.
Example: In the fraction 3/4, 4 is the denominator

Equivalent fractions - Two fractions that express the same part of a whole. There is a number by which both the numerator and denominator of one fraction can be multiplied or divided to yield an equivalent fraction. 1/4, 2/8, and 3/12 are all equivalent fractions.
Example: $\frac{1}{4}$ = 2/8 = 25/100

Fraction - A part of a whole. A common fraction is made up of a numerator and a denominator. The numerator is shown on top of a line and is the number of parts of the whole. The denominator is shown below the line and is the number of parts by which the whole has been divided.
Example: 2/3, in this fraction the whole has been divided into three parts. This fraction represents 2 parts of the 3.

Half - Half is a common fraction that can be written $\frac{1}{2}$. It can also be written as 0.5 or 50%.

Improper fraction - A fraction where the numerator is greater than the denominator. It has a value greater than 1.
Example: 5/4

Lowest Common Multiple (Denominator) - The least common multiple of the denominators of two or more fractions. That is, the lowest number which is a multiple of both denominators.

Mixed number - A number that is made up of a whole number plus a fraction. Example: 3 1/4

Numerator - The top part of a fraction. It shows how many equal parts of the denominator are represented.
Example: In the fraction 3/4, 3 is the numerator

Percent - A percent is a special type of fraction where the denominator is 100. It can be written using the % sign.
Example: 50%, this is the same as $\frac{1}{2}$ or 50/100

Proper fraction - A proper fraction is a fraction where the numerator (the top number) is less that the denominator (the bottom number).
Example: $\frac{3}{4}$ and 7/8 are proper fractions

Proportion - An equation stating that two ratios are equivalent is called a proportion.
Example: 1/3 = 2/6 is a proportion

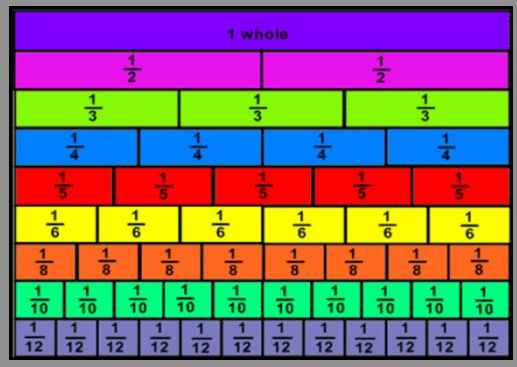
Ratio - A ratio is a comparison of two numbers. It can be written a few different ways.
Example: The following are all ways to write the same ratio: 1/2 , 1:2, 1 of 2

Reciprocal - The reciprocal of a fraction is when the numerator and denominator are switched. When you multiply the reciprocal with the original number, you always get the number 1. All numbers have a reciprocal except for 0.
Example: The reciprocal of 3/8 is 8/3. The reciprocal of 4 is $\frac{1}{4}$.

Simplify - Simplifying (or reducing) fractions means to make the fraction as simple as possible. Rewriting the fraction with the smallest numerator and denominator but without changing the value of the fraction.
Example: Why say four-eighths (4/8) when we really mean half (1/2) ?

Unit Fraction - A fraction where the top number (the "numerator") is 1.
Example: $\frac{1}{2}$ and $\frac{1}{4}$

Non-unit Fraction - A fraction where the top number (numerator) is greater than 1.
Example: $\frac{3}{8}$ $\frac{7}{8}$



- Please feel free to come and talk to a member of the Maths team if you have any further queries